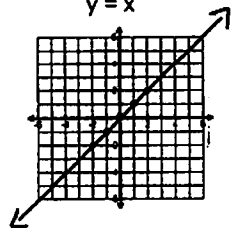


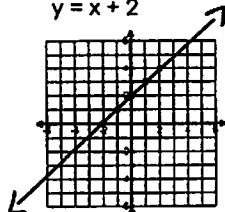
# Transformations of Linear and Exponential Lab

Name \_\_\_\_\_ Class Period \_\_\_\_\_

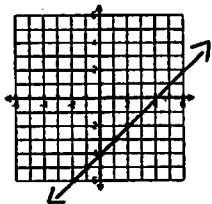
Given the function  
 $y = x$



Given the function  
 $y = x + 2$

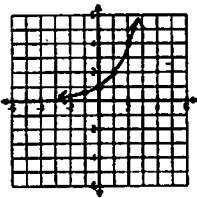


Given the function  
 $y = x - 4$

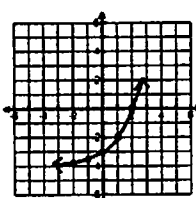


1. What transformation do you observe when a number is added or subtracted to the original linear function?

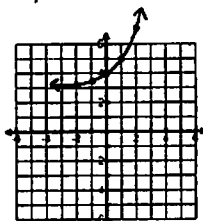
Given the function  
 $y = 2^x$



Given the function  
 $y = 2^x - 4$

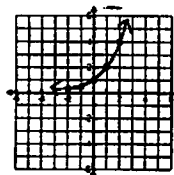


Given the function  
 $y = 2^x + 3$

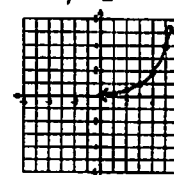


2. What transformation do you observe when a number is added or subtracted to the original exponential function? Do the same rules apply as with the linear function?

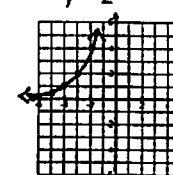
Given the function  
 $y = 2^x$



Given the function  
 $y = 2^{x-3}$

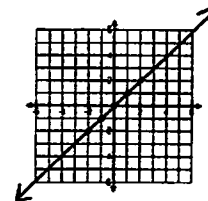


Given the function  
 $y = 2^{x+4}$

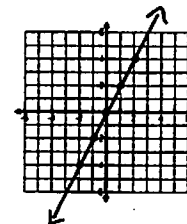


3. What transformation do you observe when a number is added or subtracted to the exponent in the exponential function?

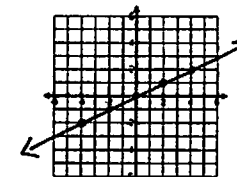
Given the function  
 $y = x$



Given the function  
 $y = 2x$

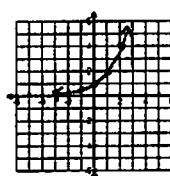


Given the function  
 $y = \frac{1}{2}x$

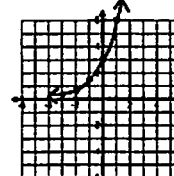


4. What transformation do you observe when the function is multiplied by a number less than 1? \_\_\_\_\_ greater than 1? \_\_\_\_\_

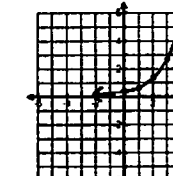
Given the function  
 $y = 2^x$



Given the function  
 $y = 3(2^x)$

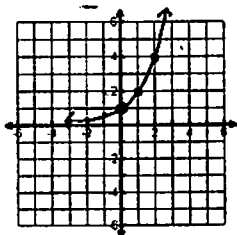


Given the function  
 $y = \frac{1}{3}(2^x)$

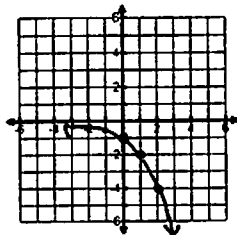


5. What transformation do you observe when the function is multiplied by a number Less than 1? \_\_\_\_\_ Greater than 1? \_\_\_\_\_

Given the function  $y = 2^x$



Given the function  $y = -2^x$



6. What transformation do you observe when the function is multiplied by  $-1$ ?

You should be able to describe the transformations (without graphing them) based on the patterns you have observed during class.

Describe all the transformations.

1.  $f(x) = x - 10$

2.  $f(x) = 2(4)^x$

3.  $f(x) = -x + 7$

4.  $f(x) = 3x - 2$

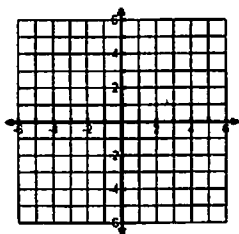
5.  $f(x) = -(3)^x - 5$

6.  $f(x) = \frac{1}{3}(2)^x - 4$

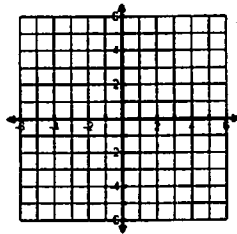
7.  $f(x) = -4(2)^x + 8$

Let's combine several transformations together.

7. Graph the function  $y = 3x - 4$



8. Graph the function  $y = -(2)^x + 5$



9. Did the individual rules still apply?